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Hyphopolynema ingae sp. nov., associated with leaf-spot disease on *Inga edulis* in Brazil

Danilo B. Pinho, Andre L. Firmino & Olinto L. Pereira

oliparini@ufv.br
Departamento de Fitopatologia, Universidade Federal de Viçosa
Viçosa, Minas Gerais, 36570-000, Brazil

Abstract — A leaf-spot forming anamorphic fungus, *Hyphopolynema ingae* sp. nov., collected on *Inga edulis* in a fragment of Atlantic forest in Brazil, is described, illustrated and compared with five previously described *Hyphopolynema* species.

Key words — appendages, biodiversity, foliicolous fungi, hyphomycetes, taxonomy

Introduction

Inga edulis Mart. (*Mimosaceae*) is a widespread tree in the tropical secondary forest of the Amazonian region and the fragments of Brazilian Atlantic forest (Marangon et al. 2003, Lorenzi 2009). The plant is known by the local population for its sweet edible fruits and antioxidant property of leaves and in folk medicine for its anti-inflammatory and anti-diarrheic properties (Silva et al. 2007, Souza et al. 2007, Lorenzi 2009). During a mycofloristic survey in a fragment of Atlantic forest in the municipality area of Viçosa, Minas Gerais, Brazil, leaves of *I. edulis* showing a leaf-spot disease were collected. On microscopic examination, it was observed that an appendage-bearing anamorphic fungus was associated with the leaf spots. The fungus, which was found to represent a new species of the genus *Hyphopolynema* Nag Raj, is described, illustrated, and discussed in this paper.

Material and methods

Samples of infected leaves were collected, photographed, and dried in a plant press. Freshly collected samples were examined under a stereomicroscope (Olympus SZ40). Hand sections and fungal material scraped with a scalpel from the plant surfaces were mounted on glass slides with lactophenol. Measurement

and illustrations were carried out with a Carl Zeiss Standard W fitted with a camera lucida drawing apparatus. Photomicrographs were taken in an Olympus BX51 light microscope fitted with a digital camera (Evolt E330). Specimen of the fungus examined was deposited in the Herbarium at the Universidade Federal de Viçosa (Herbarium VIC).

Taxonomy

Hyphopolynema ingae Pinho & O.L. Pereira, **sp. nov.** Figs 1-2

MycoBank 518225

Ad Hyphopolynema tropicale *differt in cellulae conidiogenae 21–33 × 2–5 µm, collis notatis absentibus, setae sporodochio, conidia non guttulata, 0-septata, appendicibus non ramosis.*

Holotype: on leaves of *Inga edulis* Mart. (*Mimosaceae*), Brazil, Minas Gerais, Viçosa, Reserva Florestal Mata do Paraíso, 6 February 2009, O.L. Pereira (VIC 31222).

Etymology: from the host genus *Inga*.

Lesions on living leaves, amphigenous, irregular, 0.2–1.4 cm diam., light brown, whitish to grayish at center, surrounded by a purple well defined border, coalescent and necrotic with age. Conidiomata scattered, discrete or often confluent, circular to oval in outline, sporodochial, pulvinate, superficial. Setae sparse in sporodochia, peripheral, erect, straight or slightly curved, medium brown, smooth, 6–9 septate, slightly tapered and paler towards the obtuse apex, 102.5–145.0 × 4.0–5.0 µm. Conidiophores generally reduced to conidiogenous cells, 1–3 septate, pale brown, smooth. Conidiogenous cells terminal, determinate, clustered, integrated or discrete on conidiophores, branched especially at the base, monophialidic, pale brown, smooth, cylindrical or long lageniform and tapered gradually towards the apex, mostly straight, 21.5–37.0 × 2.0–5.0 µm, conidiogenous locus apical, single to each cell, phialide aperture 1.0–2.0 µm wide, with an inconspicuous collarette. Conidia formed in white masses, blastic-phialidic, hyaline, aseptate, smooth, not guttulate, straight, curved or irregular, fusiform, apex acute or rounded, base truncate, often protuberant, 9.0–15.0 × 3.0–6.0 µm; with one apical and 2–4 basal unbranched filamentous appendages, 5.0–10.0 µm long.

Comments — Five species have previously been described in the genus *Hyphopolynema*. *Hyphopolynema ingae* is the second species reported on *Mimosaceae*. The other species, *H. tropicale* Nag Raj, is distinguished from *H. ingae* by smaller conidiogenous cells, absence of collarette, absence of setae on conidiomata, guttulate septate conidia, and branched appendages (Table 1). *Hyphopolynema tropicale* occurs on pods of *Inga spectabilis* (Vahl) Willd. (Nag Raj 1977), whereas *H. ingae* was found growing on living leaves of *I. edulis*. Among the six *Hyphopolynema* spp., only *H. ingae* and *H. australe* B. Sutton &

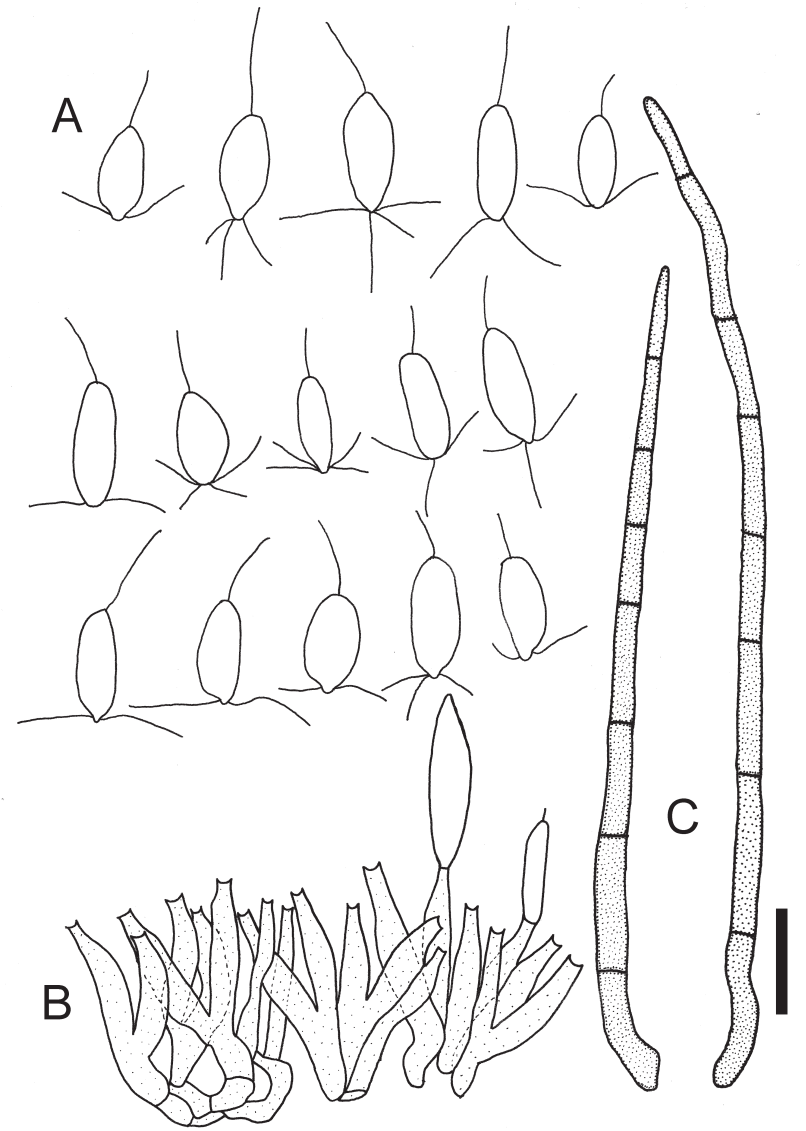

Figure 1. *Hyphopolynema ingae* (VIC 31222, holotype) on *Inga edulis*.
Conidia with flexuous appendages (A).
Conidiogenous cells arranged in sporodochia (B) and sporodochial setae (C).
Scale bar = 15 µm.

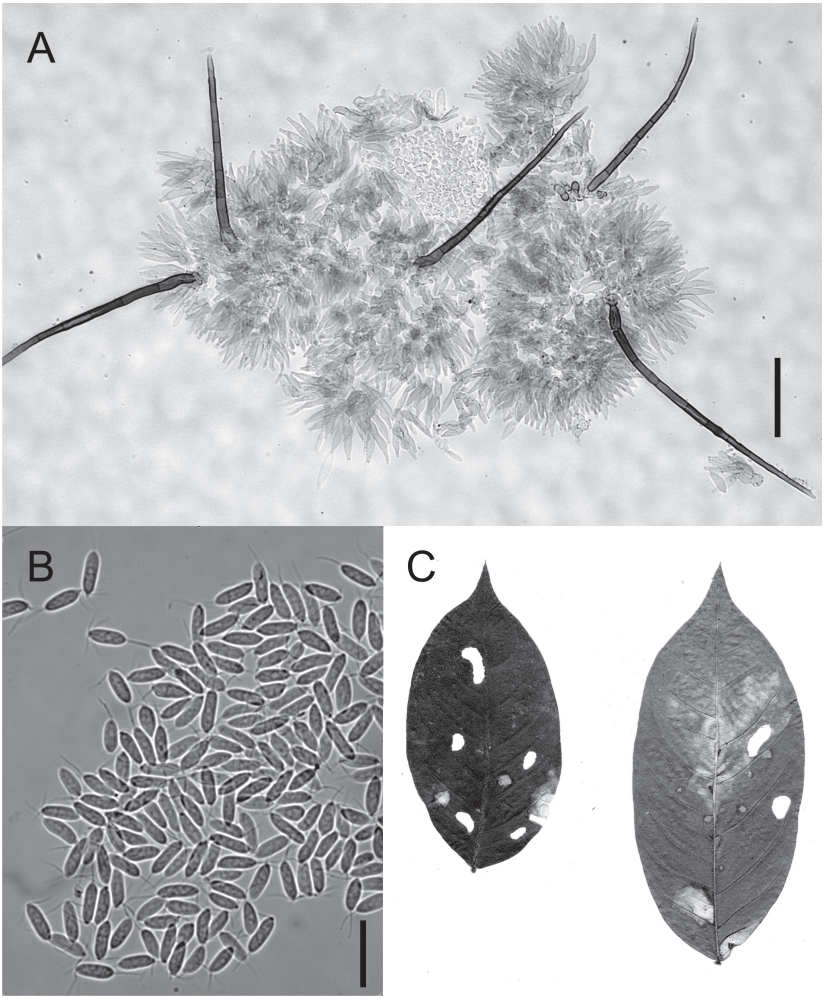

Figure 2. *Hyphopolynema ingae* (VIC 31222, holotype). A. Conidiogenous cells arranged in sporodochia. B. Mass of conidia with flexuous appendages. C. Leaf spots associated with *Hyphopolynema ingae* in adaxial and abaxial surfaces from *Inga edulis*.

Scale bars = 40 µm (A); 25 µm (B).

Alcorn are known to occur on living host leaves. In addition, in *H. australe* and *H. ellisiorum* B. Sutton & Alcorn, the conidiophores and conidiogenous cells are hyaline (Sutton & Alcorn 1984). *Hyphopolynema juncatile* Kohlm. & Volkm.-Kohlm. forms a pseudostroma in the cortical tissue of the host (Kohlmeyer

& Volkmann-Kohlmeyer 1999). The sixth species, *H. stilboideum* Bhat & W.B. Kendr., has synnematal conidiomata without setae and produces conidia that are slightly constricted at the septum (Bhat & Kendrick 1993).

Table 1. Biometric data (µm) of the species of *Hyphopolynema*.

Species	Conidiogenous cells	Conidia	Appendages	Setae
H. tropicale	11–25 × 3–4	10–17.5 × 4–6	4–9	absent
H. ellisiorum	4–15 × 2.5–4	12.5–13.5 × 2.5–3	7–11	150 × 4
H. australe	7–19 × 2–2.5	15–24 × 2–2.5	4–18	265 × 5–6
H. stilboideum	30–40 × 3–4.5	13–19 × 5–7	8–15	absent
H. juncatile	–	13–16 × 3–4	7–10	55–90 × 4–7
H. ingae	21.5–33 × 2–5	9–15 × 3–6	5–10	102.5–145 × 4–5

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